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How we allowed Soviet cheating on SALT to go undetected.

Deciphering the Russians

The United States appears to be without an adequate technical intelligence capability for monitoring the tests of new Soviet nuclear missiles, a perilous state of affairs that may not be fully remedied until 1983. This inadequacy has three sources: the loss in 1979 of crucial monitoring stations in Iran that provided basic coverage of testing grounds in nearby Soviet Asia; inexplicable delays in deploying new-generation satellite observation systems by the United States; and Soviet concealment of the character of the tests through the latest techniques of "encrypting" (coding) radio signals transmitted by the missiles. There is general agreement among a majority of experts in the defense and intelligence communities that for all the above reasons the United States lags behind in its monitoring efforts.

The upgrading of American intelligence monitoring capability and the increasingly serious question of Soviet encrypting of missiles' tests may constitute fundamental problems for the Reagan administration to solve before embarking on SALT negotiations with Moscow. Reagan may have had encrypting in mind when he spoke of Soviet "cheating," and he may act soon to challenge the Soviets about reports of at least 30 Soviet violations of SALT II.

Our ability to observe and interpret Soviet missile tests extends beyond the confines of SALT treaties. Both SALT I and SALT II (the latter signed by former president Carter and Soviet president Brezhnev in June 1979, but never submitted for Senate ratification here) provide that "each party undertakes not to interfere with the . . . means of verification of the other party." In monitoring Soviet missile flight tests, the most important means of verification are telemetry measurements. Telemetry measurements are readings of radio signals transmitted by a missile, starting before launch and continuing during the entire trajectory, reporting on every aspect of its performance up to the separation of MIRV warheads from the projectile. United States intelligence is keen on intercepting these telemetry signals to learn important details about the tests. These data tell the United States much of what it needs to know about Soviet compliance with SALT limitations on testing and subsequent deployment of nuclear weapons, as well as about what the Russians are doing in missilery not covered by SALT.

Though the SALT treaties ban either side's interference with verification, including encryption, they allow encryption in tests of weapons whose development does not come under the SALT ceilings. In the judgment of such serious critics of SALT II as Ohio's Democratic senator John Glenn, this freedom to encrypt telemetry in tests outside the treaty constitutes the agreement's worst flaw, because it allows the Russians to test all forms of new strategic technology. SALT II is no longer an immediate issue inasmuch as President Reagan has indicated that the 1979 text must be renegotiated, but the overall telemetry problem now plagues United States intelligence in an extraordinary fashion.

FOR NEARLY a quarter of a century, the Soviet Union has been launching intercontinental ballistic missiles, as well as other space vehicles, from two Central Asian testing centers. One is Tyuratam on the Syr Darya River, northeast of the Sea of Aral, and the other is Plesetsk, between the Caspian and Aral seas, northwest of the city of Bukhara. Over the years the United States has been able to monitor tests at Tyuratam and Plesetsk from satellites and from two telemetry stations operated in northern Iran. The Iranian sites were close to the Soviet border. Their highly sensitive directional antennae could read Soviet telemetry signals from Tyuratam and Plesetsk along a line of sight, assuring excellent reception. The two stations taped Soviet missile telemetry around the clock, and data thus obtained were analyzed with satellite photography and information obtained from satellite heat and other sensors. This arrangement provided the United States with at least 60 percent of the knowledge it required about Soviet missile tests.

But soon problems began to emerge. In 1977, the fifth year of SALT I, United States intelligence learned that the Soviets had shifted to new telemetry systems, which rendered monitoring more difficult. The Carter administration, which had just assumed office, decided to design new United States satellite monitors and to adapt existing ones to the new conditions. This was when the drama began.

To start production on the new technology (which was already available) an initial outlay of $185 million, a pittance in terms of technical intelligence expenditures, was proposed for the fiscal year 1978 budget. It

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